

YELLOW FEVER 1742 - 11

[THIS little piece was written about the end of the winter 1793-4, on the occasion of a growing alarm of the yellow fever being again in Philadelphia. Fear began to spread in the city: and, had it extended to the members of the national legislature; so as to have occasioned their removal from town, it would have been attended with considerable disadvantage to the public affairs. Copies were distributed among the gentlemen of congress, and to a few of the city. But it happened that several, who could not have been purposely overlooked, did not receive any: and applications have been made for copies when there were none left. To answer these, a few copies more, with notes, are struck off.]

YELLOW FEVER.

THE *yellow fever*, or tropical endemic caufus, and the *small pox*, are inflammatory in the attack; and are communicated by specific contagion. The poison of the former, as it seems, is conveyed directly to the stomach with the saliva, or any thing swallowed, and acts upon it, and upon the pylorus and duodenum, by corrosion; which first raising an inflammation on the parts, these afterwards become gangrenous. This poison acts as other acrid poisons taken into the stomach. The disease is a corrosion of the stomach, the pylorus, and the duodenum; all else of the complaints, are they more than symptoms consequent of that corrosion? *

The contagious poison of the *small pox* acts more like that infused into the blood by the bite of poisonous animals, which contaminates the mass.

The constituent parts of these poisons, or by what process of nature they are generated, few pretend to know; and though some may fancy they know them, yet it is beyond the conjecture of most.

* See an account of dissections, page 9.

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Whilst we are ignorant of the cause of the *yellow fever* and *small pox*, we may however admit that they are infectious, though not alike in all circumstances.* The small pox may be communicated in all states of the air, but the yellow fever can exist only in a *hot air*, as histories of it show: and there are also strong reasons for believing from those histories, that *frost* kills the infectious matter of it, as surely as it kills certain other exotics. Many people, in the time of the late epidemic in Philadelphia, looked for rain,

* The tropical endemic yellow fever is not always contagious. It exists in the West India islands for years together without being notably so. Strangers from northern climates are very liable to take it on their arrival there; and it goes hard with them. Their being so very susceptible, is owing more to their intemperance, and exposure to night air, dews and rains, than to contagion. After some number of years, it is ushered in with aggravated circumstances. It thus becomes very contagious, and is a distinct and most fatal disease. Such was the yellow fever in Philadelphia in 1793, and in the West Indies in 1793 and 1794. The milder or common yellow fever of the islands can never be conveyed to the continent, because it is not contagious, and the contagious kind seldom exists in the islands:—thence the long intervals of its appearance on this continent. All plagues have their periods. When the peculiar circumstances that occasion or admit of the aggravation in the yellow fever give way, the disease becomes no longer contagious, but sinks into the common and less virulent tropical yellow fever. It is said, an *excess* of *heat* or of *cold* will destroy certain diseases. The dreaded Natolian plague (commonly called “*The Plague*”) has existed, at times, in the higher but mild latitudes, hitherto, without having ever originated any where else than in *Natolia*. It is often in northern Egypt and on the coast of Barbary: but it is said to be always carried thither from its *Natolian* source. M. *Savery* calls Constantinople and Smyrna the *Foci* of it. Was this kind of plague ever known to exist

which they believed would be fatal to the infection.* Others regarded not the coming of rain, otherwise than as it might be attended with or followed by *cold*; and they looked only for mere *cold*, whether attended with rain or not, because histories of this fever assured them that *cold* had always been fatal to the infection. It is admitted that floods of rain, by diluting and washing off the stagnant putrid water of a low country, relieve from the remitting, the bilious, and the putrid fevers common to such countries.

Although the yellow fever originates in countries of perpetual *heat*, yet it may be brought from thence into this country of both cold and heat, as it heretofore has been: there are, however, two particulars especially necessary to that end; that it be in the *peculiar air of a large town*, and that the season be *hot*. It may well be presumed it cannot act, in this country at least, but under this combination; because it never yet has appeared on the continent, unattended

between the tropics? It has been carried to England, and other countries of heat and cold, where it raged. All the countries of its existence are in the *temperate climates*. Did it ever exist in countries of continual heat? On the other hand, the yellow fever, in its virulent state, *originates* only within the tropics, the lower latitudes of perpetual heat: but it is of a nature to act in the higher latitudes, under a combination of certain peculiar circumstances, when introduced from its native source. There must be such a combination to produce and support these contagious and dreadful diseases. Other circumstances arrest, and in the end annihilate them.

* In Granada, “As the change to *moisture* was remarkably great and sudden, much expectation was formed that the virulence of the infection would be done away or abated: but *neither* happened.” Chisholm.

with those circumstances. If the matter of this contagion suffers *cold*, it suffers death; as may be collected from facts uniformly heretofore happening in this country. When it was in Charleston, S. C. in 1748, it received its death stroke from cold air on the fourteenth of October; and about the same time of October it lately experienced the like, on the change of air from an uncommon heat, for that season, to the proper degree of autumnal cold. The cool air, especially at night, in the last week of September, 1793, produced such a change in the degree of infection and complaints of the sick in Philadelphia, that the physicians expressed an agreeable surprize, on the great abatement of both: but the return of warm close weather, with a shift of wind from the *northern* quarters to the *southern*, in the beginning of October, gave so fatal a malignancy to the disease, as occasioned more frequent deaths, for some days, even after the return of cooler weather: but, it seems it had generally effected too much to admit of recovery, of the *then* sick, in any state of the air afterwards.

For supporting the foregoing principles, we need only be assured that the yellow fever has never been communicated in country places or small towns on this continent; and that as often as it has been amongst us, it always appeared to be imported, always vanished in the cool season of autumn, and never recurred with the ensuing summer, nor until again ushered in from the West Indies. Reports say indeed, that it has been taken in country places, in some few instances. But on inquiry, it appears there has been a want of knowledge to distinguish the yellow fever from diseases of the

country, the symptoms being partly alike. In other instances, people have received the infection in Philadelphia, but have pretended they had not been in the city: others alarmed, have imagined they had it, when they have only had a little cold or common complaint, or mere apprehension may have induced the supposition.*

People and merchandise have been continually arriving from the West India islands, the source of the yellow fever for ages past; yet the disease was never communicated to the people of this city, but in the heat of summer, and that only thrice in above sixty years; probably the seldomer, from the contagious matter having generally spent itself, or evaporated in the time of performing the voyages.

* It seems there still is a suspicion in some physicians, founded on the narrations of other people, that there were a few instances of the infection taken in country places. But to ascertain facts of this nature, and distinguish them with accuracy, for a physician to judge of them with certainty, is not very easy in common. Diseases originating in or greatly affecting the stomach, are attended with symptoms much alike, from the common intermittent to the yellow fever. Any thing corrosive or acrimonious, acting forcibly on the coats of that bowels, must immediately affect the nerves, which there abound, and readily communicate sensations to the very extremities. The beginning of the worst of the yellow fever has been taken, in Philadelphia, for only a cold or obstructed perspiration. Perspiration, by the bye, being refused a passage through its natural outlet, becomes depraved and even acrimonious. It then soon affects the fibres and the nerves, and induces spasm (whether it be perceptible or not) attended with tremours, head-ach, heaviness, restlessness, anxiety, pains, nausea or vomiting. If haply the perspirable matter is driven into the canal, it is

To satisfy the mind that the late epidemic, in Philadelphia, was introduced from a tropical climate, sober reason requires but to know, that it is a disease natural to the West India islands; that it never was known to originate in this country; but has been admitted, without a doubt of any one till now, to have been always brought from thence; that it has been, this year, raging in those islands more than usual; that there never was before such a plenty of means for bringing it from thence, and that it first broke out in a part of the city near which ships from those islands, that had unusual numbers of sick people on board, discharged their cargoes. From all which circumstances there arises an irresistible presumption, that the late contagious fever, called the yellow fever, was imported from the West India islands.*

thence discharged in the character of diarrhœa. But, if its stimulous produces fixed spasm on the intestines, whilst the pores of the skin still remain closed, costiveness then occurs, and the perspirable matter is every way shut up. It seems, that from the spasm of the stomach, extended, arises the costiveness usual in the yellow fever; which remains, till recovery or putrefaction releases the fibres from the spasm. When putrefaction happens to effect this—then it is that bystanders become astonished on seeing the spontaneous discharges, which are immense, in fluids that had been accumulating, and were imprisoned by the spasm now suddenly let loose on an entire loss of tone in the fibres.

* The introduction of the yellow fever from Boullam, in Africa, into St. George's, in Granada, was by the ship Hankey, in February, in the year 1793, and it was called the “*Boullam fever*,” or “*Boullam malignant pestilential fever*.” Doctor Chisholm thinks it is the same with that which raged in Philadelphia in that year.

It has been inconsiderately imputed to Philadelphia, that it is more liable to receive the yellow fever than other large towns of America. It is made by people who had collected from recent hasty publications, that it had been three or four times in this city, without their being informed how often it had been in other towns. This fever, it seems, has been at least as often in Charleston, S. C. and New York. The accurate doctor *Lining* speaks of four times that it was in Charleston; in the years 1732, '39, '45, and '48. Charleston being nearer the ocean, the tropic, the Havanna, and the West India islands, seems more liable to receive the infection than a town further from them, and near a hundred miles inland, that in general is remarkably healthful, and which would

He illustrates this idea by the instance of a vessel, belonging to Philadelphia, introducing the disease into St. Pierre, Martinique, in October, 1793, and by a vessel from New London touching at St. Pierre, and carrying the infection to Granada in February, 1794. He adds, that on the sick being put under his charge, he found the disease was his old enemy, the malignant pestilential fever, (meaning no doubt the same with that introduced from Boullam into Granada in the preceding February) which he successfully treated with mercury. It raged in Granada in 1793, and generally among the West India islands, more or less, through that and the next following year.

The Boullam fever, in 1793, *February*, was imported into Granada from Boullam. In *July* following, into Philadelphia from the West India islands. In *October* following, into Martinique from Philadelphia. Being identically the same in qualities, it was as readily returned from hence to the islands, as it was at first brought from thence to the great towns of the continent. A vessel of Philadelphia lost her supercargo at Granada, who died there of the Boullam fever so early as April, 1793.

probably scarcely ever receive it, were it not that it is more populous, and therefore has more of the air peculiar to large towns, which is so necessary, together with the heat of a summer, to give action to the contagious matter, on its speedy arrival *fresh* from its tropical source.

It is also said that the yellow fever has been introduced into this country in ships from Rotterdam and Ireland, crowded with passengers: but this a great mistake. The *hospital fever* has often been introduced by them into America, but never once the yellow fever, which is not a disease of northern climates. The *hospital* or *gaol fever* is thought to arise from *animal effluvia*. Prisons, hospitals and ships are crowded with men, and abound with excrementitious *animal effluvia pent up* from fresh air. The *gaol fever* is peculiar to such places, and is very infectious.

It is wished those persons who are apprehensive that contagious matter of the yellow fever is wrapped up in furniture, and they know not what, and that it will break out next summer, would be at the pains to inform themselves, from the histories of the disease heretofore published, of the manner and the time when it usually arrived or broke out, and when it died away on this continent. It will pacify them. They will especially be assured that some number of years passed away between the times of its recurring in our country.

THE public is obliged to doctors *Physick* and *Catbrall* for an account, early given; of their dissections of persons who died of the yellow fever which raged in Philadelphia in the year 1793; the purport whereof follows, together with remarks thereon by the editor.

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1. The *brain* in all its parts, has been found in a natural condition.

Remark. *The disease is local to the stomach and parts near it. The brain is distant from the seat of it. The first, second, third and ninth of the following instances of dissection were of such persons as died early in the disease. Note well the ninth observation of the doctors.*

2. The viscera of the *thorax* are perfectly sound. The blood however, in the heart and veins, is fluid; similar in its consistence to the blood of persons who have been hanged or destroyed by electricity.

Remark. *The early death from spasm of the stomach—a stroke local that effects not general disease, may account for this: and moreover, in hot weather coagulation occurs not very soon.*

3. The *stomach* and beginning of the *duodenum* are the parts that appear the most diseased. In two persons who died of the disease on the *fifth day*, the villous membrane of the stomach, especially about its smaller end, was found highly *inflamed*, and this inflammation extended through the pylorus into the duodenum, some way. The inflammation here was exactly similar to that induced in the stomach by acrid poisons; as by arsenic, which we have once had an opportunity of seeing in a person destroyed by it.

Remark. *This illustrates the reality of the matter of a specific contagion acting immediately on the stomach. A part whereof may tend downward, and here and there attach to the intestines. If some of it is, in certain cases, enveloped in the passing excrement, so as to be carried off at the common outlet,*

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yet enough of it may adhere, and act on the bowels to the worst purposes.

4. The bile in the gall bladder was quite of its natural colour, though very viscid.

Remark. *The fluids are not the immediate subjects of this disease.*—*The preceding are in instances of early deaths, in the state of a contraction or inflammation of the stomach. The following are of later deaths, where gangrene has occurred, after the inflammatory state.*

5. In a person who died on the eighth day of the disease, several spots of *extravasations* were discovered between the membranes, particularly about the smaller end of the stomach, the inflammation of which had considerably abated. Pus was seen in the beginning of the duodenum, and the villous membrane of this part was thickened.

Remark. *The inflammation abates as gangrene approaches. Was not the production of pus owing to an effort of health? The thickening was an indication of putrefaction.*

6. In two other persons who died at a more advanced period of the disease, the stomach appeared spotted in many places with *extravasations*, and the inflammation disappeared. It contained, as did also the intestines, a black liquor, such as had been vomited and purged before death.—This black liquor appears clearly to be an altered secretion from the liver: for, a fluid in all respects of the same qualities was found in the gall bladder. This liquor was so acrid that it induced considerable inflammation and swelling on the operator's hands, which remained some days. The villous membrane of the *intestines*, in these last two bodies, was found inflamed in several places.

Remark. *The effects of the poison, though mostly local to the stomach and duodenum, sometimes appear in other parts of the bowels; and they act destructively where there is the readiest susceptibility. The poison first is in contact with the stomach: and after having effected a corrosion and inflammation there, which is followed by a gangrene of that bowel, it or some part of it may descend, as it seems, and raise an inflammation on the inferior bowels, where it chances to adhere, even*

after the stomach is destroyed. The general mass is not immediately contaminated by the attack on the stomach, so as to become gangrenous or putrid: otherwise, could a subsequent inflammation be produced on the other bowels?

7. The liver was of its natural appearance, excepting in one of the last persons, on the surface of which a very few distended veins were seen, although other abdominal viscera were of healthy appearance.

Remark. *The spasms and corrosions of the stomach are considerable. Such as must soon induce general disorder of the body, and extensive morbid effects both in the solids and the fluids, though not always alike or in the same parts.*

8. The external surface of the stomach, as well as of the intestines, was quite free from the inflammation; the veins being distended with blood, which appeared through the transparent peritoneum, gave them a dark colour.

Remark. *This is further in favour of the locality of this disease. How confined!—All is effected first by contact with the fibres and nerves of the stomach. The symptoms were diffuse; and in the end the fluids with the solids become extensively morbid.*

9. The stomach of those who died early in the disease, was always contracted: but in those who died in a more advanced period of it, where extravasations appeared, it was distended with air.

Remark. *The corrosive poison early injures the fibres of the stomach, and occasions spasm; first of the minuter parts with which it comes into contact; and this presently extends so considerably and so forcibly as to contract the whole or a great part of that bowel, during the inflammatory state, and until gangrene dissolves the contraction of the fibres. The consequent putrefaction is then attended with a distension of the parts. Such sudden, strong, and extensive contraction must arrest the natural and necessary functions: and death comes with speed, before time is given for gangrene to effect it.*

The first part of the paper is devoted to a general
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